

LED Demonstration Pilot



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What does PNNL have to do with LED's?



DOE Lighting Program



Legislative Mandate

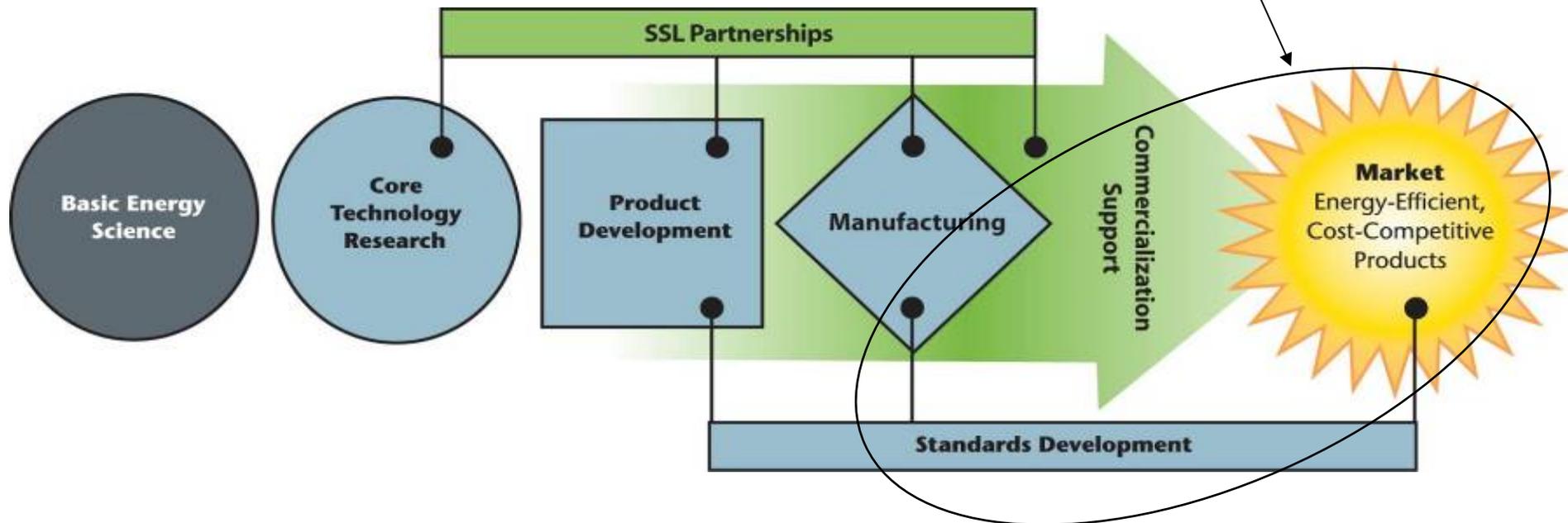
The DOE is directed by U.S. government policy (EPACT 2005, Section 912) to:

“...support research, development, demonstration, and commercial application activities related to advanced solid-state lighting technologies based on white light emitting diodes.”

DOE SSL Program Strategy



PNNL lead technical support



Guiding technology advances from laboratory to marketplace



DOE Lighting Program

SSL Commercialization Support Programs



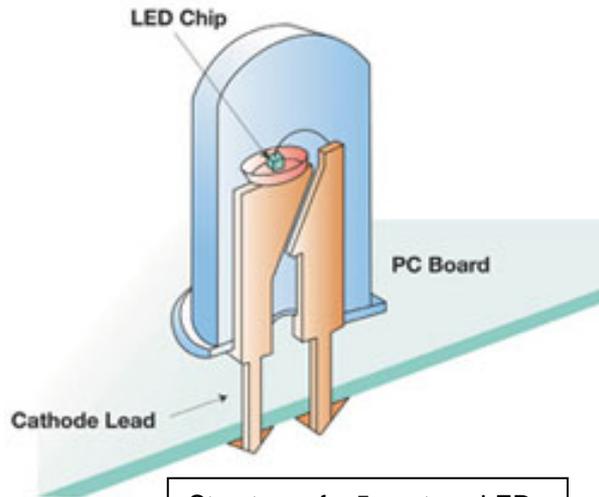


What is an LED?



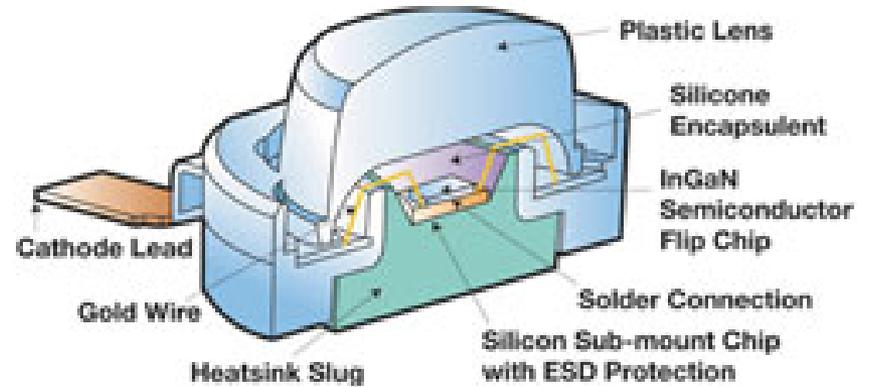
LED Types

5 mm "Indicator"

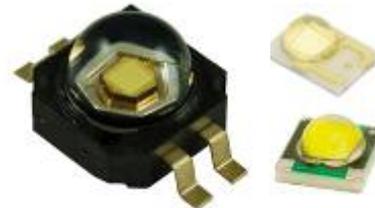


Structure of a 5mm type LED.
Source: Philips Lumileds

High power/flux



Structure of a high-power LED.
Source: Philips Lumileds

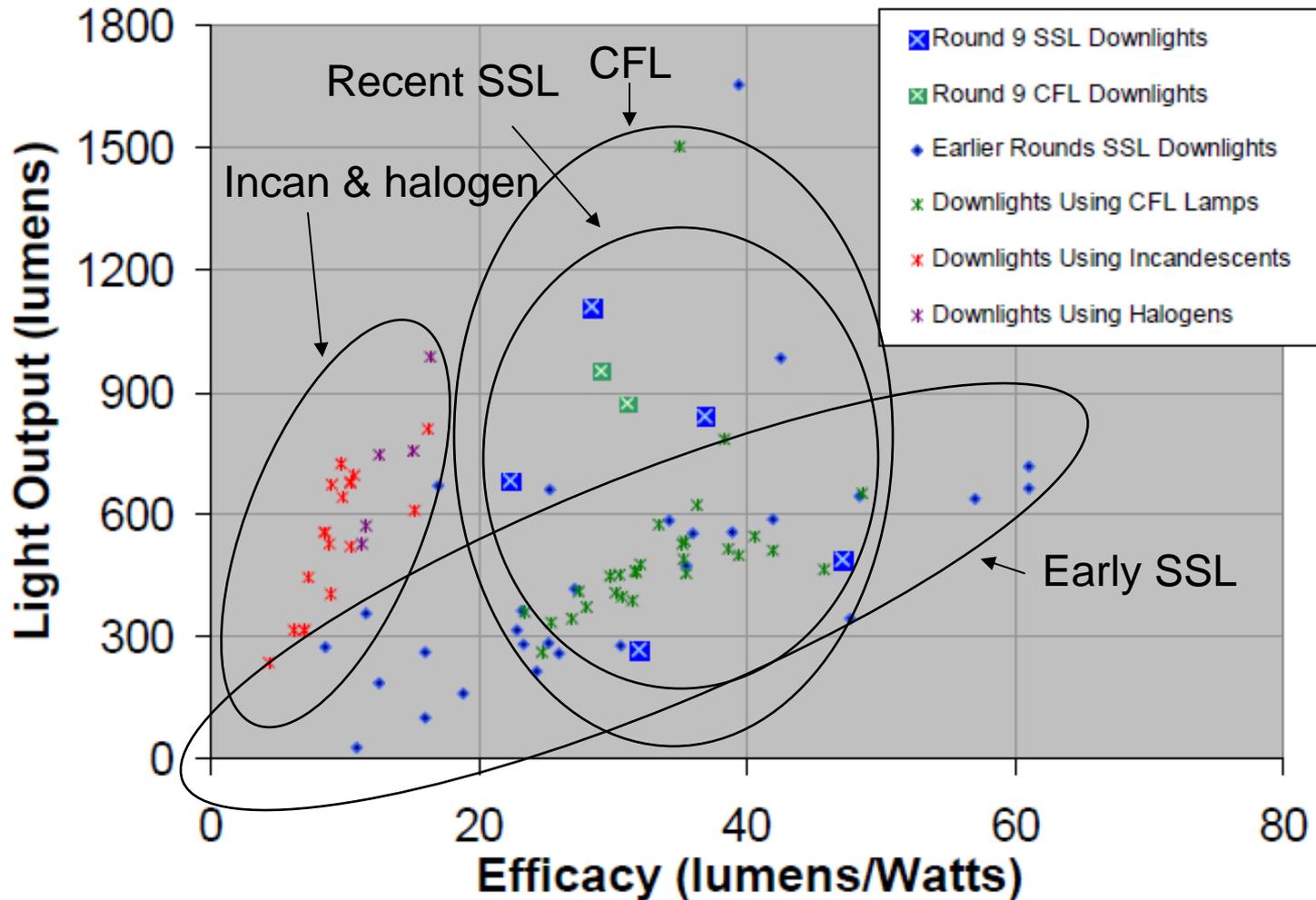




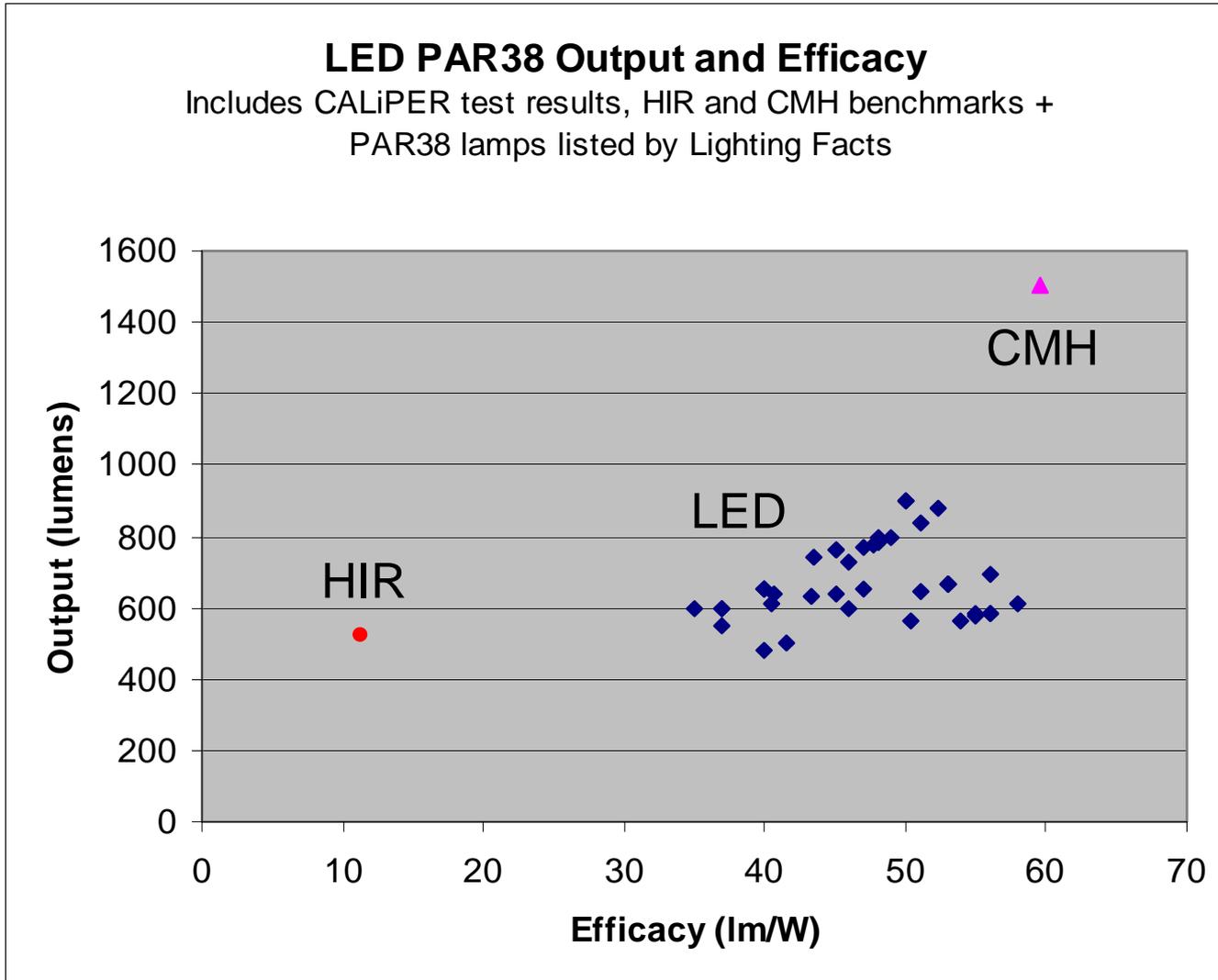
Why LED down lights?



DOE CALiPER Testing - Downlights



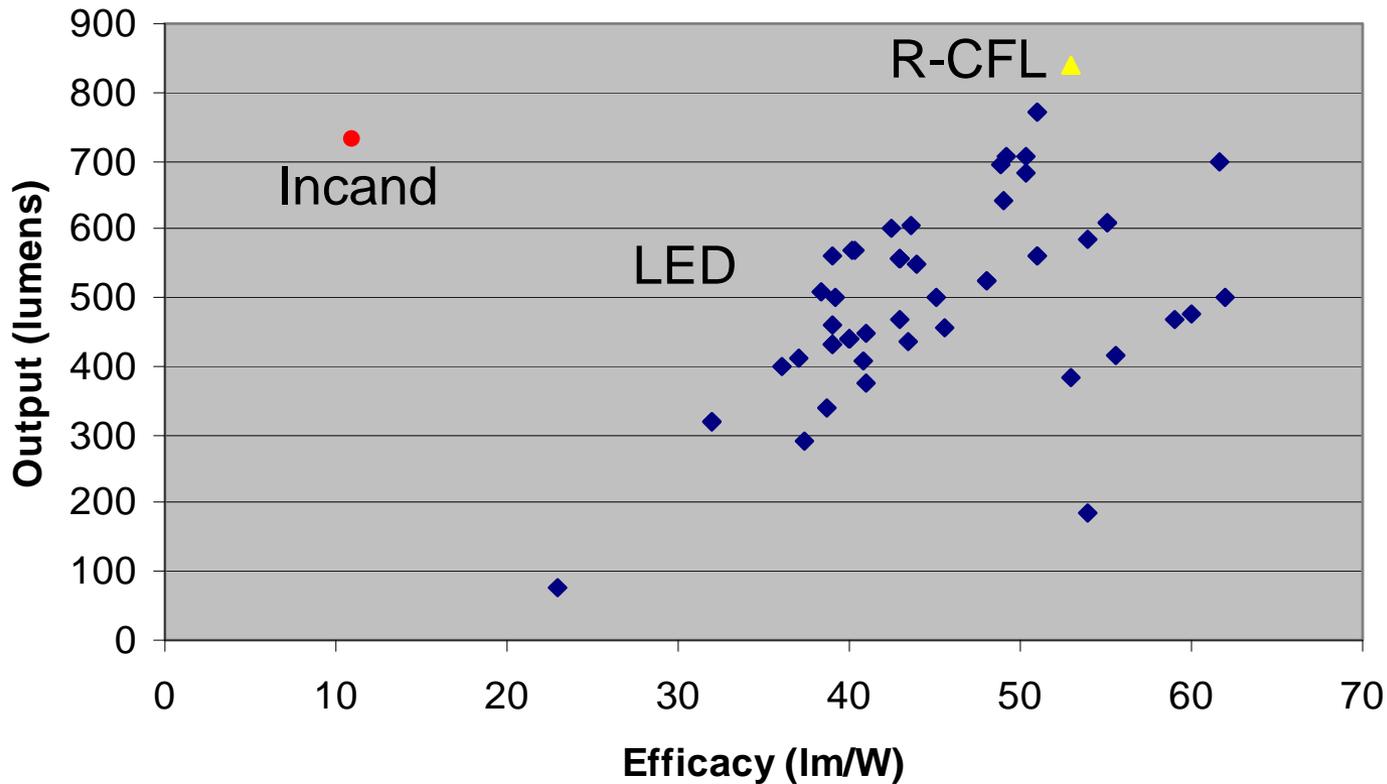
Current LED PAR38 Performance



LED PAR/R30 Performance

LED PAR/R30 Output and Efficacy

Includes CALiPER test results, incandescent and CFL benchmarks +
Lighting Facts listed products



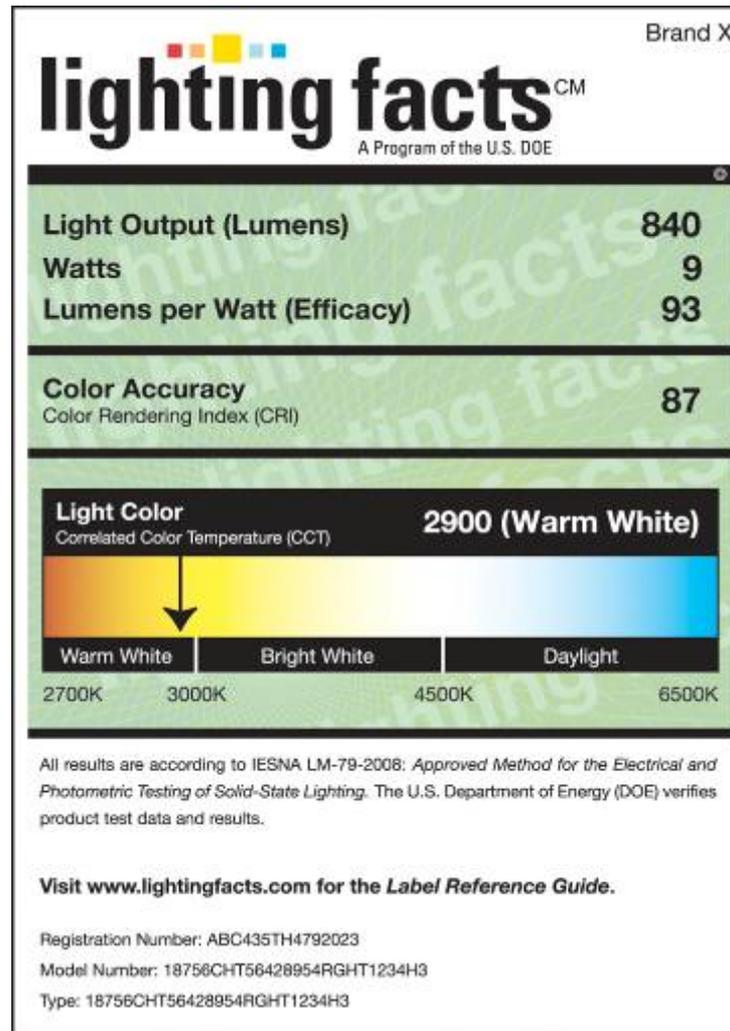
ENERGY STAR SSL Qualified

- Residential: 159 products
 - 96 downlights
 - Cree screw-in retrofit
- Commercial: 170 products
 - 156 downlights
 - Cree screw-in retrofits



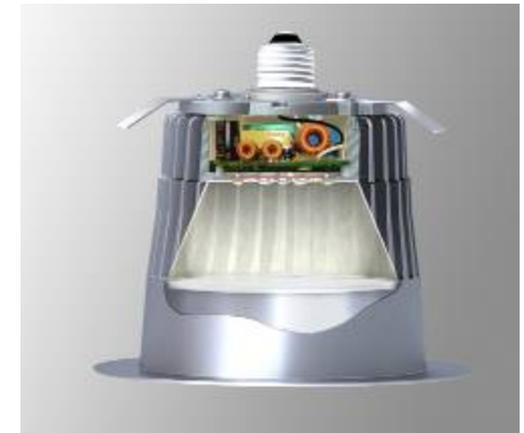
Lighting Facts

- 570 products listed
 - 250 replacement lamps (all types)
 - About 50 PAR/R30
 - About 40 PAR38



Grand Prize Winner

Cree LED Lighting – LR6-DR1000



LIGHTING 
for
tomorrow



Special Focus – Technical Innovation

Cree LED Lighting – Par 38 Track Fixture



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Special Focus – High Efficacy

Cree LED Lighting – LR6-HE



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for
tomorrow



Where can I learn more about LED down lights?



- www.ssl.energy.gov/factsheets.html
- <http://www.lightingfacts.com/default.aspx?cp=content/products>
- http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/gateway_eugene.pdf
- www.energystar.gov/led
- <http://www.cee1.org/files/FINALCommercialLightingProgramSummary.xls>





LED's in the Lighting Calculator?



Why LED's?



- **LED's can efficiently improve light quality in the right applications**
- **LED's are commercially available and prices are dropping**
- **Energy efficiency incentives are available for LED lights**
- **Need more experience with LED lights**



BPA Provided LED Demo Products:



- suitable for replacing 65 to 150 W inc.
- 45 lumens per Watt
- 50,000 hour life
- 92 CRI
- 2700K or 3500K
- Dimmable to 20%
- 3 Year Warranty



LED Demo Objectives

- **Demonstrate alternatives to incandescent down lights**
- **confirm LED product performance**
 - **heat tolerance**
 - **LED product life**
- **Document LED installation barriers**
- **Summarize LED satisfaction feed-back**



Demonstration of:



- or**
- 1) LED recessed can lights (up to 6 inches in diameter)
 - 2) LED track lights

**as replacements for 65 W incandescent
MR and PAR down-lights**



What are NOT included in this LED Demonstration?

- Exterior (street lights, parking lot lights, etc.)
- troffer fixtures
- linear lights
- task lights
- refrigerated case lights



LED Pilot Timeline



- 6/30/2010 -Utilities propose project
- 7/23/2010 -BPA negotiates and orders agreed upon LED lights
- Utilities facilitate agreed upon project
- HWM credit if installed by 9/30/2010
- 9/30/2011 –LED Pilot ends



LED Demo Proposals



- LEDs should replace 65 W incandescent MR or PAR lamps
- “Soft” maximum of 20 LEDs
- Include any planned promotions
- Describe how public feed-back will be encouraged



LED Demonstration Pilot



- Submit proposals by June 30th at <http://www.surveymonkey.com/s/N7Y2R9W>
- BPA will provide agreed upon LED lights for up to 20 proposals, limited to 3 successful proposals per BPA utility



LED Demo Proposal evaluation criteria:



- 1) Availability to the Public (3 points)**
- 2) Promotion plan (2 points)**
- 3) Public feedback (2 points)**
- 4) Proposed demo space (2 points)**
- 5) Installation schedule (1 point)**



Successful proposers will need to:

1. Provide baseline light level readings and good quality pictures of incandescent lights
2. Negotiate the final quantity and type of LEDs
3. Facilitate installation by September 30, 2010, to receive HWM credit
4. After LED installation provide light level readings and good quality pictures
5. Facilitate any warranty issues
6. Participate in 2 brief surveys (less than 10 questions).
7. Promote the LED Demonstration and provide public feed-back, as proposed
8. Provide data for case study



LED Demo Ideas



- **High public traffic areas**
- **Promotion of LED's**
- **Public feed-back**
- **Unique space or application**
- **Quick installation**





LED Demo Questions?



Have utilities provided incentives for LEDs?



- Where?
- What kind?
- Tell us more about the application





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LED Demo Pilot
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